

## CLAIMS

What is claimed is:

- 5           1. A method for planning product groups, comprising:  
          providing a process group including a plurality of processes;  
          sorting said processes according to their respective production  
          capacity;  
          selecting said processes whose sum of their respective  
10       production capacities in proportion to the total production capacity of  
          said process group not less than a predetermined ratio;  
          according to said selected processes to define each of said  
          selected processes as a product group; and  
          incorporating said unselected processes of said process group  
15       into said product groups according to process resemblance.
2. The method of claim 1, further comprising defining said  
          process with said production capacity within a certain period not less  
          than a predetermined value as a product group.
- 20           3. The method of claim 1, wherein said predetermined ratio is  
          determined according to the 80/20 principle to select said processes  
          whose sum of their respective production capacities not less than eighty  
          percent of the total production capacity of said process group.
- 25           4. The method of claim 1, wherein said process resemblance is  
          defined according to following steps:  
          calculating difference rate between said process i and said  
          process j for consuming time in machines according to the equation of
- 30

wherein, said process i represents one of said product groups of said

$$\frac{\sum_r \left( \frac{|PT_{ri} - PT_{rj}|}{PT_r} \right) * times_r}{\sum_r times_r}$$

process group;

5 said process j represents one of said unselected processes of said process group;

PT<sub>ri</sub> represents the unit processing time for said process i in said machine r;

PT<sub>rj</sub> represents the unit processing time for said process j in said machine r;

10 PT<sub>r</sub> represents the average unit processing time in said machine r;

times<sub>r</sub> represents total times for said process j consuming in said machine r; and

15 determining said process resemblance between said process j and said process i according to said minimum difference rate.

5. A method for planning product groups, comprising:

providing a process group including a plurality of processes;

sorting said processes according to their respective production

20 capacity;

setting a first predetermined ratio and a second predetermined ratio of the total production capacity of said process group, said first predetermined ratio larger than said second predetermined ratio, and

the sum of both equal to 1;

selecting said processes whose sum of their respective production capacities in proportion to the total production capacity of said process group not less than said first predetermined ratio;

5 according to said selected processes to define each of said selected processes as a product group; and

incorporating said unselected processes of said process group into said product groups according to process resemblance.

10 6. The method of claim 5, further comprising defining said process with said production capacity within a certain period not less than a predetermined value as a product group.

15 7. The method of claim 5, wherein said process resemblance is defined according to following steps:

calculating difference rate between said process i and said process j for consuming time in machines according to the equation of

$$\frac{\sum_r \left( \frac{|PT_{ri} - PT_{rj}|}{PT_r} \right) * times_r}{\sum_r times_r}$$

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wherein, said process i represents one of said product groups of said process group;

said process j represents one of said unselected processes of said process group;

$PT_{ri}$  represents the unit processing time for said process i in said machine r;

5  $PT_{rj}$  represents the unit processing time for said process j in said machine r;

$PT_r$  represents the average unit processing time in said machine r;

10 times  $t_r$  represents total times for said process j consuming in said machine r; and

determining said process resemblance between said process j and said process i according to said minimum difference rate.

15 8. A method for planning product groups, comprising:  
providing a process group including a plurality of processes;  
sorting said processes according to their respective production capacity;

20 according to the 80/20 principle, selecting said processes whose sum of their respective production capacities not less than eighty percent of the total production capacity of said process group, and selecting said process whose said respective production capacity within a certain period not less than a predetermined value;

according to said selected processes to define each of said selected processes as a product group; and

25 incorporating said unselected processes of said process group into said product groups according to process resemblance.

9. The method of claim 8, wherein said process resemblance is defined according to following steps:

30 calculating difference rate between said process i and said process j for consuming time in machines according to the equation of

$$\frac{\sum_r \left( \frac{|PT_{ri} - PT_{rj}|}{PT_r} \right) * times_r}{\sum_r times_r}$$

wherein, said process i represents one of said product groups of said process group;

5        said process j represents one of said unselected processes of said process group;

$PT_{ri}$  represents the unit processing time for said process i in said machine r;

$PT_{rj}$  represents the unit processing time for said process j in  
10    said machine r;

$PT_r$  represents the average unit processing time in said machine r;

$times_r$  represents total times for said process j consuming in said machine r; and

15        determining said process resemblance between said process j and said process i according to said minimum difference rate.